An Overview of the SAMHSA/CSAP Workplace Managed Care Financial/Cost Research Evaluation Guide

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Introduction. We were asked by SAMHSA, the folks at CSAP, and the grantees under the Workplace Managed Care Initiative to write a detailed report about the kinds of analyses that can be used to evaluate workplace substance abuse prevention and early intervention programs.

The techniques we chose to write about are called cost-benefit analysis (CBA) and cost-effectiveness analysis (CEA). Many textbooks about CBA and CEA exist, but there are very few examples in the literature showing how to apply these techniques to evaluate workplace programs devoted to substance abuse. Therefore, we produced a document that describes the concepts that underlie CBA and CEA. We also wrote about some of the logistic issues that must be addressed when working with data for CBA or CEA that come from a number of sources. These sources might include medical records, insurance claims, EAP programs, managed care organizations, and human resources departments. None of these data were generated for program evaluation purposes, and it can be a challenge to meld them together to evaluate the effectiveness of a substance abuse program from a wide variety of angles.

The purpose of the guide that we produced was to facilitate the cost-benefit and cost-effectiveness analyses that can be used in a program evaluation context. The guide begins by defining CBA and CEA. We note what these techniques are intended for, and why they may be useful for evaluating substance abuse programs.

Next, the guide describes the eight major components of cost-benefit and cost-effectiveness analysis. The first and most important component includes efforts to identify the hypotheses

one wants to test in the evaluation framework. These hypotheses should emanate from an underlying idea about the purpose of the substance abuse program, whom it intends to serve, how services will be applied, and what outcomes are expected to result from participation in it. Three additional components relate to the mechanics of conducting CBA or CEA. Another component describes methods to test the sensitivity of the results obtained in the analyses. The last two components include methods for reporting the results of the analyses and noting their limitations.

Subsequent chapters of the report deal with many of the challenges associated with each component and with the technical and logistical issues to master when CBAs or CEAs are conducted. Several recommendations are offered, along with a glossary of terms that may facilitate data collection and analytic strategies. A detailed glossary and reference list are also included. In total, the guide we wrote is about 95 pages long; today I'm just going to offer a brief summary of it.

Cost-Benefit and Cost-Effectiveness Analyses. CBA and CEA are tools used to systematically value the costs and the consequences of participating in an intervention. Successful measurement of these costs and consequences allows one to array the costs and benefits of an intervention and its alternatives. This process will illustrate the "bang for one's buck" associated with each program. This may significantly enhance the ability to judge the worth of competing programs, or to estimate the impact of these programs on substance abuse in the workplace.

There is some controversy among economists regarding ways to differentiate between CBA and CEA; we took the majority view and differentiated between them on the basis of how one measures the consequences of participating in a program. In CBA all of the costs and benefits are put in dollar terms. One then subtracts the costs from the benefits (all being cast in current dollars) to estimate the financial impact of the intervention.

CEA goes a little bit further. In addition to counting the dollars, it also considers the non-

monetary consequences of participating in an intervention. One can then relate these consequences to the cost of the program to get a better idea of the program's impact.

The Eight Components. There are eight major components of cost-benefit and cost-effectiveness analysis. Basically, these components reflect a scientific research process. Our view is that one cannot complete a sound program evaluation without adhering to the science of program evaluations. More cavalier, less rigorous approaches are not likely to produce sound estimates of the impact of the program in question.

The more rigorous research process we propose is a standard someone noted in the textbooks mentioned earlier. First one must decide what kinds of questions to address and what kinds of hypotheses to test in the evaluation. Hopefully these will be based on program design or underlying theory, and reflect what is important to stakeholders as well.

Second and third, one must account for all of the monetary costs and benefits of producing, implementing, and consuming the services under the program of interest. The guide describes ways to do that, and how to handle costs and benefits that occur in the later years of the program. We note that costs and benefits in later years must be discounted and put in today's dollars, to adjust for inflation and to account for the fact that dollars obtained or spent today are worth more than the same number of dollars obtained or spent in subsequent years.

Fourth, we mention ways to deal with the nonmonetary benefits of the program of interest. These may include changes in the prevalence of workplace substance abuse problems, changes in relapse rates, or changes in quality of life at home or at work. These are nonmonetary in nature but still must be counted, and we offer some notes in the guide about how to do that.

Fifth, the guide illustrates how to take all of the information about the costs, benefits, and effectiveness of a program and put them together into metrics that summarize the net value of the program in financial terms or in cost-effectiveness terms. Examples of these metrics include net present value estimates, the internal rate of return, and incremental cost-

effectiveness ratios. These metrics are defined in detail in the guide.

Sixth, the guide describes ways to perform sensitivity analyses. Sensitivity analyses show how results from a CBA or CEA may change as different assumptions are made about what costs and benefits to count, how to count them, what discount rates to use, what inflation adjustments to use, and whose perspective should guide the analysis. Other assumptions may be varied and tested as well.

With respect to the evaluation perspective, different results may be obtained if one focuses on the company's bottom line rather than focusing on the total impact of the program on its participants. In a good CBA or CEA, multiple perspectives should be considered.

Seventh, the guide focuses on presenting the results of the CBA or CEA in a way that facilitates effective decision making. Several recommendations are offered on the basis of previous research in this area.

Finally, the guide notes that the limits of the CBA or CEA should be discussed. For example, analysts should note why the scope of the analysis may be limited, which topics could not be addressed, which stakeholder views could not be accommodated, and which important hypotheses could not be addressed. Some comments on the reliability and validity of the data used to conduct the CBA or CEA should be offered, and some text on the potential implications of acting on the CBA or CEA results should be provided. For example, the report should speculate on the business, ethical, political, and other consequences of expanding programs with favorable cost-benefit results, at the expense of competing programs that do not look as attractive from a financial or cost-effectiveness viewpoint.

Logistic and Operational Issues. There are a number of logistic and operational issues that are described in the guide as well. These include how data should be collected for the report, and the appropriate consideration of payments for services as opposed to the prices charged for those services.

The report also notes methods for cleaning data and producing an analytic file. In addition to collecting information on the company's financial and other contributions to the program, we recommend collecting information about the cost that each person has to pay to participate in the program, about how much money is spent on each person's care, and about how each person was affected by participating in the program. Having detailed person-level data enhances flexibility later on, since it allows for an estimate of the program's effect on the typical participant, as well as allowing the ability to generate group-level or business unit-level reports.

Next, the guide includes information about methods to link data sets from a variety of sources. Linking may be problematic because there are many different kinds of data to deal with, and these data were produced for many different reasons by folks who normally do not interract with each other on a day-to-day basis. Thus, it may be hard to merge data from medical claims, medical records, human resources departments, EAP programs, and managed care organziations.

Another operational issue refers to what we mean when we're talking about substance abuse services. Data on these services may be coded in a variety of ways. For example, some insurance claims processors use ICD-9 diagnosis codes, while others use DSM-IIR, DSM-IV, or ICD-10 codes. Unfortunately, these coding mechanisms were constructed with different approaches in mind, and it may not be possible to generate complete crosswalks between them.

One also has to worry about reliability and validity of the data that are being used in the analysis. There is some text on this issue in the guide.

Next, there is a fair amount of text in the guide about what to do when data for managed care organizations are missing. Often managed care organizations lack detailed data on the cost of the services used to treat individuals; we note some methods that others have used to impute these data for the CBA or CEA.

Next, the guide describes a variety of issues to address when estimating the impact of the substance abuse program with statistical analyses. Some text is devoted to appropriate methods for randomized and nonrandomized studies, dealing with intent-to-treat designs, dealing with selection biases, and other statistical issues. The purpose of this text is to suggest methods that enhance the ability to estimate the impact of the substance abuse program, and differentiate between the effects of participating in the program and other competing factors that influence the outcomes measured.

Recommendations. In the guide we offer about 35 recommendations for conducting cost-benefit and cost-effectiveness analyses. Some of these recommendations relate to the perspectives to use for the analyses, while others relate to methods for collecting data and dealing with data problems.

Probably the most important recommendation offered is to document every step so that others can fully understand the analysis and replicate it if need be.

Conclusions. CBA and CEA are techniques one can use to estimate how effective the substance abuse program might be and what kind of "bang for the buck" one may have received by implementing the program.

Like any other research process, cost-benefit and cost-effectiveness analyses measure associations, and that is all they do. They were not designed to measure causality; no research can measure causality anyway. Even in a perfectly executed randomized study, causality is not established; it is always inferred. Moreover, the results of a CBA or CEA may or may not apply to any given individual. Thus, one should keep in mind that CEA and CBA produce estimates of the typical impact of the program for the average individual, hopefully as a result of participating in the program.

To produce a good CBA or CEA, there are many logistical, operational, and conceptual issues to deal with. There are also many different kinds of data to analyze, and many strategic

and analytic choices to make. When done properly, CBA or CEA will produce some valuable information that one can use to facilitate decision-making processes. This information should be weighed with other political, ethical, and business considerations when decisions are made about the fate of the evaluated program.

Thank you very much.

I would just like to make a comment that this guide will be available, when it is edited, both on the Center for Substance Abuse Prevention's Web site and in print.

Q Thank you, Ron, for speaking English today. I think that was an excellent presentation. I'm really looking forward to the report. Can you tell us if there is some magic in CBA or CEA that can help address the bias that may be inherent in the desire to give the customer what they want to hear, when what we should really do is tell the complete story about the implications of the CBA or CEA?

A I think there are a couple of things one can do. Start by getting an outside entity to conduct the analysis. Admittedly, this only goes so far, because we are hired as outside entities to do analysis all the time, and we're sometimes in the same boat. Our clients want to be able to show the effectiveness of their programs. They are not always happy if we have to say things like, "The program doesn't look like it's being effective as you thought it was going to be."

There's often that kind of pressure to deal with. I think from an academic perspective, what helps keep us true to the science is if the report produced will be submitted for some sort of public review or peer review process. In this context, individuals from the outside who read the report will often say, "Why didn't you do this?", or "What would have happened if you had done this?", or "Why did you take this perspective?" Many times these questions, constructive criticisms, and challenges will help enhance the quality of the analysis and minimize any unintentional biases.

There is no magic in terms of the techniques that one uses to conduct a cost-benefit or cost-effectiveness analysis. One can limit bias, though, by conducting analyses under a variety of assumptions to see how sensitive the results may be to different perspectives or different methods.